

Amendment under 37 CFR §1.116
Attorney Docket No.: 052478
Application No.: 10/532,827

REMARKS

Claims 1-8 are pending in the present application. Claim 1 is herein amended. No new matter has been entered.

Applicants would like to thank Examiner Goff for discussing the application in an interview on January 23, 2009.

Claim 1 has been amended to remove “at least” to clarify that the temperature is controlled within the recited range. In addition, for clarification, “-” was changed to --minus--.

Claim Rejections - 35 U.S.C. § 103

Claims 1 and 3-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over **Hase** (WO 01/32418 with U.S. Patent 7,101,455 used as a translation) in view of **Minami** (U.S. Patent 4,805,690) and as evidenced by the American Heritage Dictionary definition of “room temperature”; and claims 1-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over **Hase** in view of **Akashi** (WO 01/36122 with U.S. Patent 6,615,633 used as a translation) or **Yamagishi** (JP 03266626) and as evidenced by the American Heritage Dictionary definition of “room temperature.”

Favorable reconsideration is requested.

(1) Applicants respectfully submit that Hase in view of Minami and Hase in view of Akashi or Yamagishi do not teach or suggest:

wherein the temperature is controlled within the range of from 180°C to
(lamination temperature minus 100°C)

as recited in claim 1, and that this feature would not have been obvious.

The Office Action takes the position that Hase teaches this feature or alternatively that this feature would have been obvious based on Hase. (Office Action, pages 3-4, 6-7.)

As acknowledged by the Office Action, Hase discloses an exemplary lamination temperature of 260°C and Hase discloses cooling the laminate to room temperature after lamination. (Office Action, pages 3 and 6; Hase, col. 16, line 65 to col. 17, line 5.) Hase is silent about controlling the temperature within a specific range during the cooling process. Hase merely discloses lamination temperatures for the lamination process and, after lamination, cooling to room temperature by, *e.g.*, “natural cooling” or “forced cooling.” (*See* col. 8, lines 29-39.)

Claim 1 recites that the temperature is controlled within a range of from 180°C to a temperature calculated based on the lamination temperature, *i.e.*, lamination temperature minus 100°C. Thus, using the lamination temperature of 260°C in Hase, Hase would have to control the cooling of the laminate within the range of 180°C to 160°C (260°C minus 100°C) in order to correspond with claim 1. However, as noted above and acknowledged by the Office Action, Hase merely discloses cooling the laminate to room temperature, *i.e.*, 25°C, which is outside of the range corresponding to claim 1.

The Office Action alternatively takes the position that it would have been obvious to use any of the lamination temperatures suggested by Hase. (Office Action, pages 4 and 6.) Hase discloses that the lamination temperature is at least 200°C. (Abstract.) Based on the lowest lamination temperature taught in Hase of 200°C, Hase would have to control the cooling of the laminate within the range of 180°C to 100°C (200°C minus 100°C) in order to correspond with

claim 1. However, as noted above and acknowledged by the Office Action, Hase merely discloses cooling the laminate to room temperature, *i.e.*, 25°C, which is outside of the range corresponding to claim 1.

(2) Applicants respectfully submit that Hase in view of Minami does not teach or suggest:

controlling the temperature in a width direction of the laminate in a cooling process ***after the lamination*** so that the temperature of the ends of the laminate is the same as or higher than that of the center portion

as recited in claim 1.

The Office Action acknowledges that Hase is silent about controlling the temperature in a width direction of the laminate in a cooling process after the lamination. (Office Action, page 3.) The Office Action cites Minami for disclosing this feature.

Minami discloses uniform cooling in a width direction. Cooling roller 2 provides uniform cooling. However, cooling roller 2 is used for laminating the molten resin to the raw material paper. In other words, cooling roller 2 is for the lamination process, and thus does not provide cooling “after lamination.” The lamination process in Minami is a “cast method.” As described in the background section of Minami, in the lamination process disclosed in Minami, resin flows onto raw material paper and the resin and paper are pressed and bonded together by the nip or pressure application portion between the cooling roller and a pressure roller. (Col. 1, lines 28-33; col. 3, lines 3-6, “cooled in order to bond”) This can also be seen in Fig. 1 in which cooling roller 2 and pressure roller 1 press and bond the molten resin 7 and raw material paper 5. Thus, cooling roller 2 provides cooling “during lamination” instead of “after lamination” as recited in claim 1.

(3) Applicants respectfully submit that it would not have been obvious to combine the teachings of Minami with Hase.

The Office Action takes the position that it would have been obvious to use the cooling roller of Minami with the process in Hase. (Office Action, page 3.)

Hase discloses a lamination process using a thermal-press forming device 10 having metal rolls 4 used as thermally pressured rolls. (Col. 8, lines 16-21; Figs 1(a) and 1(b).) Hase further discloses that “the laminating materials and protective films 3 are *thermally pressured* by the metal rolls 4 *to bond* the adhesive film 2 to the copper foils 1.” (Col. 8, lines 23-26.)

As noted above, Minami discloses the use of cooling roller 2 for the lamination process. Minami discloses *pressing and bonding* the paper and the resin *between the cooling roller and the pressure roller*. (Col. 1, lines 28-33; col. 3, lines 3-6, “cooled in order to bond”; Fig. 1.)

Thus, the thermally pressured rolls 4 of Hase and the cooling roller 2 of Minami are both used for pressing and bonding.

One of ordinary skill in the art would not add a cooling roller/pressure roller as taught in Minami with thermally pressured rolls 4 in the thermal-press forming device of Hase since this would provide the redundant functionality of pressing and bonding the materials together.

One of ordinary skill in the art also would not substitute a thermally pressured roll 4 of Hase with a cooling roller 2 of Minami since a cooling roller would defeat the purpose or functionality of the thermal-press forming device of Hase. In other words, substituting a thermally pressured roll 4 of Hase with a cooling roller 2 of Minami would provide an inoperable device.

Therefore, it would not have been obvious to one of ordinary skill in the art to modify Hase in view of Minami as alleged by the Office Action.

(4) Applicants respectfully submit that Hase in view of Akashi does not teach or suggest:

controlling the temperature in a width direction of the laminate *in a cooling process* after the lamination so that the temperature of the ends of the laminate is the same as or higher than that of the center portion

as recited in claim 1.

The Office Action acknowledges that Hase is silent about controlling the temperature in a width direction of the laminate in a cooling process after the lamination. (Office Action, page 3.) The Office Action cites Akashi for disclosing this feature.

Akashi relates to a process of rolling (milling) a solid metal blank to obtain a metal plate. The solid metal blank is rolled (milled) to the metal plate which is equivalent to one roll. Generally, the metal plate in cooling process is transported at high speed (around 100km/h) and cooling is performed by spraying the metal sheet with cold water. Hot rolling temperature (around 1000°C) is much higher than that in this invention. Thus, the temperature after cooling process is still high. (Col. 5, lines 2-6.)

Akashi is directed to heating the metal plate before the cooling process so as to homogenize the plate across the width. (Col. 5, lines 44-47; col. 6, lines 58-62.) This homogenizing process is not the cooling process. Furthermore, Akashi discloses that either of the edge portion or the center portion can be heated. (Col. 3, lines 12-27.) Akashi provides no description of the cooling process.

(5) Applicants respectfully submit that Hase in view of Yamagishi does not teach or suggest:

controlling the temperature in a width direction of the laminate *in a cooling process* after the lamination so that the temperature of the ends of the laminate is the same as or higher than that of the center portion

as recited in claim 1.

The Office Action acknowledges that Hase is silent about controlling the temperature in a width direction of the laminate in a cooling process after the lamination. (Office Action, page 3.) The Office Action cites Yamagishi for disclosing this feature.

Yamagishi discloses a process of producing a polyamide sheet. Molten Nylon 4-6 is extruded from a die and cast on the cooled rotating drum. Yamagishi discloses heating the molten sheet before casting to keep the temperature of the edge portion the same as the center. Column 3, lines 7-12 of Yamagishi, translated into English, states:

As described above, it is sufficient to heat the molten sheet so as to keep the temperature of the edge portion as same as that of the center portion by the heating apparatus 5. Excessive heating may cause foaming of molten sheet (3) and disadvantage such as thermal decomposition. Therefore, heating should be controlled appropriately.

Therefore, Yamagishi discloses heating to provide a uniform temperature. However, Yamagishi does not disclose controlling the temperature in a cooling process.

Double Patenting

Claims 1, 2, 5, 6 and 8 were rejected on the ground of the nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 of **Hase** (U.S. Patent No. 7,101,455) in view of **Minami**, **Akashi** or **Yamagishi** and as evidenced by the American Heritage Dictionary

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definition of “room temperature”; and claims 3, 4 and 7 were rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 of **Hase** (U.S. Patent No. 7,101,455) in view of **Minami**, **Akashi** or **Yamagishi** and as evidenced by the American Heritage Dictionary definition of “room temperature,” and further in view of **Tokabayashi** (JP 04033848).

Favorable reconsideration is requested.

The Office Action acknowledges that claims 1-4 of Hase (U.S. 7,101,455) do not encompass the teaching of controlling the temperature in a width direction of the laminate in a cooling process such that the temperature of the ends of the laminate is the same as or higher than that of the center portion. (Office Action, page 8.)

Applicants respectfully traverse this rejection for the same reasons stated above regarding the § 103 rejection based on Hase in view of Minami, Akashi or Yamagishi.

For at least the foregoing reasons, claim 1 is patentable over the cited references, and claims 2-8 are patentable by virtue of their dependence from claim 1. Accordingly, withdrawal of the rejections of claims 1-8 is hereby solicited.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants’ undersigned attorney to arrange for an interview to expedite the disposition of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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